



A.D. 1870, 7th May. N^o 1314.

S P E C I F I C A T I O N

OF

ASTLEY PASTON PRICE.

TREATING SEWAGE.

LONDON:

PRINTED BY GEORGE E. EYRE AND WILLIAM SPOTTISWOODE,

PRINTERS TO THE QUEEN'S MOST EXCELLENT MAJESTY:

PUBLISHED AT THE GREAT SEAL PATENT OFFICE,

26, SOUTHAMPTON BUILDINGS, HOLBORN.



A.D. 1870, 7th MAY. N° 1314.

Treating Sewage.

LETTERS PATENT to Astley Paston Price, of 47, Lincoln's Inn Fields, in the County of Middlesex, Consulting Chemist, for the Invention of "IMPROVEMENTS IN THE TREATMENT OF SEWAGE, AND IN THE PRODUCTION OF MANURES."

Sealed the 1st November 1870, and dated the 7th May 1870.

PROVISIONAL SPECIFICATION left by the said Astley Paston Price at the Office of the Commissioners of Patents, with his Petition, on the 7th May 1870.

I, ASTLEY PASTON PRICE, of 47, Lincoln's Inn Fields, in the County
5 of Middlesex, Consulting Chemist, do hereby declare the nature of my
said Invention for "IMPROVEMENTS IN THE TREATMENT OF SEWAGE, AND IN THE
PRODUCTION OF MANURES," to be as follows:—

This Invention relates to the employment of the product which is
obtained by the action of an acid or acids, such, for example, as
10 sulphuric or hydrochloric acid upon natural phosphates containing
phosphate of iron or phosphate of lime, or mixtures of the same, or

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mixtures of phosphate of lime and phosphate of alumina, or mixtures of phosphate of alumina and phosphate of iron, or of mixtures of phosphate of lime, of phosphate of iron, and of phosphate of alumina, for the treatment of sewage, either alone or in conjunction with lime or with carbonate of lime, or with such base as will effect the precipitation of 5 the phosphates, and cause the separation of the suspended and other constituents of the sewage.

The precipitated phosphates thus obtained, in conjunction with the constituents separated from the sewage, may, either before or after dessication, be employed as a manure or as a constituent of manure. 10

SPECIFICATION in pursuance of the conditions of the Letters Patent, filed by the said Astley Paston Price in the Great Seal Patent Office on the 7th November 1870.

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, ASTLEY PASTON PRICE, of 47, Lincoln's Inn Fields, in the County of Middlesex, 15 Consulting Chemist, send greeting.

WHEREAS Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the Seventh day of May, in the year of our Lord One thousand eight hundred and seventy, in the thirty-third year of Her reign, did, for Herself, Her heirs and successors, give and 20 grant unto me, the said Astley Paston Price, Her special license that I, the said Astley Paston Price, my executors, administrators, and assigns, or such others as I, the said Astley Paston Price, my executors, administrators, or assigns, should at any time agree with, and no others, from time to time and at all times thereafter during the term 25 therein expressed, should and lawfully might make, use, exercise, and vend, within the United Kingdom of Great Britain and Ireland, the Channel Islands, and Isle of Man, an Invention for "**IMPROVEMENTS IN THE TREATMENT OF SEWAGE, AND IN THE PRODUCTION OF MANURES**," upon the condition (amongst others) that I, the said Astley Paston Price, my 30 executors or administrators, by an instrument in writing under my hand and seal, should particularly describe and ascertain the nature of the said Invention, and in what manner the same was to be performed,

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and cause the same to be filed in the Great Seal Patent Office within six calendar months next and immediately after the date of the said Letters Patent.

NOW KNOW YE, that I, the said Astley Paston Price, do hereby
5 declare the nature of my said Invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement :—

My said Invention relates to the employment of the product which is obtained by the action of an acid or acids, such, for example, as
10 sulphuric or hydrochloric acid or mixtures of the same upon natural phosphates containing either phosphate of iron or phosphate of lime, or mixtures of the same, or mixtures of phosphate of lime and phosphate of alumina, or mixtures of phosphate of alumina and phosphate of iron, or of mixtures of phosphate of lime or phosphate of iron, and of phosphate
15 of alumina, for the treatment of sewage, either alone or in conjunction with lime or with carbonate of lime, or with such base as will effect the precipitation of the phosphates, and cause the separation of the suspended and other constituents of the sewage.

In carrying out my Invention I firstly submit to the action of an acid
20 or acids, such, for example, as sulphuric or hydrochloric acid, or of mixtures of the same, any of the before-mentioned natural phosphates or mixtures of them, and having converted such phosphates as are capable of being rendered soluble by the action of the before-mentioned acids into a soluble form.

25 I either employ the same or a solution thereof in the following manner :—Whilst the sewage is contained in a cistern or reservoir, or whilst it is in the act of flowing thereinto, the requisite proportion of the soluble phosphates is to be added thereto, and after thorough admixture with the sewage by the use of agitators or other well-known means
30 the sewage so treated may be allowed to remain tranquil in the reservoir in order that subsidence of the resulting precipitate may be effected, or after having added to the sewage the requisite amount of the soluble phosphates a base, such, for example, as lime (by preference in the form of milk of lime), is to be added in such quantity as that the phosphates
35 in solution shall be precipitated. This result will be known by the sewage acquiring a neutral or alkaline reaction, or a base, such, for

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example, as lime, may be firstly added, and the solution of the phosphates be added subsequently, but I prefer the former process ; or the soluble phosphates may be firstly decomposed by means of a base, such, for example, as lime, or carbonate of lime, or otherwise, and the resulting precipitate may be employed for the purpose of effecting the separation 5 of certain constituents of sewage.

In conjunction with any of the before-mentioned methods of carrying out my Invention, deodorizing agents, such, for example, as animal or vegetable charcoal, may be employed, but good results will be obtained by the employment of the dissolved phosphates either alone or in con- 10 junction with a base, such as lime, as before mentioned. The sewage after treatment by either of the before-mentioned processes is allowed to settle, and the clear or supernatant water may be run off, and the deposit or precipitate collected and removed, and may be employed for agricul- 15 tural purposes, either in the moist condition or after having been submitted to a drying or desiccating process ; or the precipitated phosphates may be again submitted to the action of sulphuric acid or hydrochloric acid, or mixtures of the same, and the solution be again employed for the treatment of sewage in a manner similar to that before described. The proportions in which the soluble phosphates may be employed will 20 vary with the sewage to be operated upon and the quality of the manure desired to be obtained.

I have obtained good results by the employment of about two parts by weight of the soluble phosphates to every one thousand parts by weight of sewage treated, but I do not limit myself to such pro- 25 portions.

Having now described and particularly ascertained the nature of my said Invention, and the manner in which the same is or may be used or carried into effect, I would observe in conclusion that what I consider to be novel and original, and therefore claim as the Invention 30 secured to me by the herein-before in part recited Letters Patent is, the use of the natural phosphates herein-before mentioned, or mixtures of the same, for the treatment of sewage and for the production of manures, by firstly submitting such natural phosphates to the action of sulphuric acid, or of hydrochloric acid, or of mixtures of the same, and the 35 employment of such resulting products, either alone or in conjunction

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with a base, such as lime or carbonate of lime, for the treatment of sewage, substantially in the manner herein-before described.

In witness whereof, I, the said Astley Paston Price, have to this
my Specification set my hand and seal, this Fourth day of
November, One thousand eight hundred and seventy.

ASTLEY PASTON PRICE. (L.S.)

LONDON:

Printed by GEORGE EDWARD EYRE and WILLIAM SPOTTISWOODE,
Printers to the Queen's most Excellent Majesty. 1870.

